Political Institutions and Public Health: The Dynamics of Covid Policy Response
By

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Abstract

What is the relationship between institutions, the restrictions of civil liberties, health outcomes, and polarization during the Covid pandemic? This question is of enormous importance because we need to know whether the effects of the pandemic unfold with equal fervor across different systems or whether specific institutional contexts shape more effective responses than others. A crucial question is whether the far-reaching restrictions in civil liberties to combat the pandemic are used everywhere with similar effect or whether certain types of institutional, social, and health contexts are more likely to employ such restrictions. In short, the paper aims to sort out the relationship between institutional context, restrictions of liberties, polarization, and pandemic health outcomes. Some impressionistic evidence suggests that differences in institutional structures seem to influence health outcomes. In Germany's federal, the sub-national *Länder* governments implemented policies with little direction from the national government. Despite this varied response, Germany controlled its surging death rate. In contrast, France pursued swift action in Macron's highly centralized government by instituting stringent lockdown procedures as early as March 15, 2020. Even with these measures, France experienced much worse outbreaks than Germany registering over 20,000 deaths by April that same year compared to Germany's roughly 4,800. Is this pattern from two countries generalizable? Using a unique data set that integrates institutional features, a measure of restrictions of civil liberties, polarization indicators, and health policy outcomes, our preliminary findings show that while leaders may boast about certain policy arrangements necessary to stem the tide of the virus, forces and structures outside their immediate control ultimately constrain their ability to maneuver towards an effective policy response. While classic institutional features play a significant role in managing pandemic response, it is conditioned on the availability of hospital resources. Furthermore, the general social environment

(that is, whether societies are cooperative or antagonistic) is fundamental to how states approach the pandemic. All told, our results provide some answers on patterns of success (or failure) in addressing COVID-19.

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Finally, I dedicate this thesis to my parents, Dan and Lynne, and to my brother, Collin. Without them, this thesis would not have been possible.

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Introduction

To use Arend Lijphart's (2012) famous phrase, are kinder, gentler democracies better at handling the ongoing COVID-19 crisis? While some research has documented a relationship between political institutions and pandemic-related policy outcomes (Holman, Farris, and Sumner 2020; Tufan and Kayaaslan 2020), our knowledge about the dynamic relationship between governing institutions and health outcomes remains incomplete. Scholars have shown that institutional design choices between unitary and federal political systems (that is, the degree to which sub-national units have autonomy in policy formation and implementation) are the main causal driver in a state's collective response to lowering death rates and controlling the spread of the virus. The adaptability and agility of institutions is the primary vehicle through which states maneuver towards an effective COVID-19 policy response (Hassenteufel 2020; Janssen and van der Voort 2020). While these studies highlight important relationships, they focus on institutions, omitting important health and culture variables, such as investments in hospital infrastructure and polarization. Simply put, do patterns of democracy matter equally to containing the virus?

On key health metrics like total deaths and case positivity rate, the COVID-19 pandemic affected many democracies differently. Even among the long-established liberal democracies in Europe, the effects of COVID-19 have been unequally distributed; for example, while Italy was battered by infections and excess mortality, deaths in France and Germany remained low in the early months of the virus (Buthe et al. 2020). Similarly, as the pandemic raged on, states in Latin America and the Caribbean accounted for over 40% of average global deaths by the middle-to-end of 2020 (Capano et al. 2020). What produces such sharp disparities in success (or failure) to deal with COVID-19? Recent research has identified two competing explanations to answer this question, but they remain incomplete.

First, scholars argue political institutions are the main causal driver of success in managing COVID-19. Early case studies looking to European democracies discovered that power dispersion and federalism played a pivotal role in allowing states to adapt to ever-changing conditions. These so-called *vertical* democratic institutions, scholars argued, allowed for heterogenous policy response—that is, policies catered towards local and regional conditions rather than single mandates from a centralized government. When policy design considers diverse populations and diverse local conditions, they produce objectively better outcomes, so the argument goes, leading to lower death and case rates. However, most studies of political institutions stop there; rarely do they consider *horizontal* political institutions, such as party systems, electoral rules, or cabinet structures. As Lijphart (2012) first articulated, "consensus democracies—on the executives-parties dimension—have a better performance record than majoritarian democracies." He noted that consensus democracies performed better on several government performance indicators that included government effectiveness, economic growth and stability, and social welfare. These elements of democratic performance are intimately linked with COVID-19 because the virus impacts virtually every aspect of government and social life. The exclusion of a discussion surrounding the influence of horizontal democratic institutions on policy response is puzzling.

This omission matters because it is important to determine how *both* the vertical dimension of democracy (whether institutions affect power and relationships between different *levels* of government) and the horizontal dimension of democracy (whether institutions affect power and relationships among different *branches* of government)—impacts policy response in crisis situations because they are more likely to occur in the future (Tollefson 2020; Sonnicksen 2022). If certain combinations of political institutions are better able to handle this pandemic,

then it suggests an effective model of political organization around which other states coalesce in mitigating future disasters. But the seriousness of COVID-19 extends far beyond simple death rates. Against the backdrop of these issues, states have intervened in the social life of citizens in non-subtle and often intrusive ways. Restricting travel, compulsory contact tracing, and restrictions on social gatherings have curtailed the freedoms of individual citizens. While democratic polities initially tolerated these measures to "flatten the curve," the narratives surrounding their use evolved from one about public health to a political one focused on ideology making their continued use controversial and, in some cases, even anti-democratic. Thus, this raises the question whether institutions lead to better outcomes when they restrict civil liberties?

The second explanation for divergent success in managing COVID-19 lies with the capacities of various healthcare systems and hospital resources. Taking from the vast literature on resource capacity and "preparedness" or "readiness," what matters most in controlling the spread of COVID-19 and its effects are the resources to hospitals and the general capacity of healthcare systems to fight the virus. Research shows that states that have robust quarantine procedures in place, as well as stockpiles of up-to-date personal protective equipment (PPE), and an abundance of both general admission hospital beds and intensive-care (ICU) rooms, are better positioned to combat deadly infectious diseases (Lee et al. 2013). But what happens when the imposition of civil liberties in efforts to "flatten the curve" interacts with hospital resources? Are there certain conditions in which civil liberties restrictions are more effective? As Studdert and Hall (2020) noted, if the United States, for example, wanted to get ahead of this virus, it would have to implement mass testing, effective quarantining, and information sharing on a scale never seen before.

A third potential explanation not discussed previously surrounds the nature of social polarization. Polarization occurs when there are distinct ideological or policy divisions among groups of citizens, parties, or political elites (Moral and Best 2021). These ideological and policy divisions often result from long-standing social conflicts (from cleavage structures, for example). Such conflicts split citizens into specific groups that have their own firm ideas of what constitutes the "best" policy approach to an identified social problem. The pernicious effects of social polarization manifest often as governmental paralysis when policy formulation and implementation creeps along as different groups fight for political control. Polarization may also contribute to whiplash as new governments implement complete policy reversals from the preceding government (as happens often in Brazil's hyper-polarized Congress where minimal winning coalitions shift between elections). Linked to Lijphart's concept of consensus-majoritarian democracy, polarization indicates whether citizens live in cooperative or antagonistic social environments. If citizens live in cooperative social environments, they are probably more likely to unify in the face of COVID-19. In contrast, citizens that live in highly antagonistic social environments will encounter a much more disjointed policymaking process that slows meaningful progress towards managing this public health crisis.

We address these issues and adjudicate between these explanations by using a combined panel data set from Varieties of Democracy (V-Dem) that include many institutional variables and health outcomes obtained from John's Hopkins University's (JHU) COVID data. Included in this dataset are also features of the healthcare system that are, all things equal, *just* as important as the political institutional environment they co-exist with. Our central finding is that democracies with more consensus-based institutions, more hospital resources, and less polarization perform much better in terms of lowering case rates and limiting excess mortality.

While the imposition of civil liberties restrictions does have a significant effect, the magnitude is much smaller. We also uncover a significant interaction between hospital resources and consensus-based democratic institutions. The marginal effect of moving towards more consensus democracies is high in majoritarian systems with low hospital resources. These findings point to several implications. Among them are that political decision-makers face a significant trade-off between investments in healthcare and the continued use of proven (yet controversial) non-pharmaceutical interventions to stop the virus. Second, that despite investments in healthcare system resources leading to fewer deaths, whether societies are cooperative or antagonistic plays a fundamental role in their approach to managing the COVID-19 crisis.

COVID-19: Epidemiology and a Public Health Crisis

Beginning in December 2019—and possibly even early in November—cases of unexplained pneumonia ravaged the city of Wuhan, the capital of Hubei province in Central China. These unexplained cases would later be identified as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), referred to as COVID-19. Shortly after the identification of this highly infectious disease, health officials noted a connection between cases and the Wuhan Huanan Seafood Wholesale Market which sold aquatic and other wild animal products—although retrospective investigations would later rule out the Huanan Market as the epicenter of the virus (WHO 2021). Despite a significant amount of research, the exact intermediate host (that enabled animal-to-human transmission) remains elusive. After this evolution, human-to-human transmission began quickly, and this strain of the virus showed greater infectivity because of the unique spike protein bonding pattern (Vasireddy et al. 2021).

Despite initial measures to contain the outbreak in China, it spread internationally in January 2020. This forced the creation of the joint WHO-China mission to implement measures

to contain the outbreak and share information with other nations. Since the beginning of 2020, there have been a reported 452 million cases and over six million deaths—the first pandemic of this century. International health officials classified this disease as a pandemic because of (1) the unavailability of an effective vaccine, (2) the high transmission rate, and (3) the relatively unknown nature of the disease (Mandal et al. 2020). According to worldometer's COVID-19 tracker, the disease has affected over 210 countries.

What makes this virus so deadly is its novelty—humans have never encountered this disease before and so no one was immune to it (UCI 2020). Because the virus affects the upper respiratory system, it spreads as easily as influenza through coughing, sneezing, and talking. Infected individuals may also "unknowingly spread the virus days before they begin to experience symptoms." Sometimes, individuals may not experience any symptoms at all (referred to as asymptomatic carriers). In a recent meta-study of 2,788 COVID-19 patients, around 48.2% were asymptomatic carriers. Of those carriers, women and children were the most likely to present with asymptomatic COVID-19 (Syangtan et al. 2021). The prevalence rate of asymptomatic COVID-19 presents many problems for countries trying to control the virus because such individuals will often escape traditional detecting mechanisms because they rarely present with typical clinical symptoms.

The recent proliferation of several variants of the original COVID-19 strain (i.e., delta, omicron, and deltacron variants) has posed even greater challenges to states trying to maintain effective control over the virus. Some variants—such as those originating in South Africa—have reduced the effectiveness of the two most popular vaccines provided by Pfizer and Moderna (Vasireddy et al. 2021). To address these issues, one of the most common measures states have used to control the spread has been the implementation of stringent lockdown procedures and

social distancing. As Mandal et al. (2020) noted, however, indefinite lockdown is not feasible because of the long-term economic pressures such policies create, so states must perform a delicate balancing act between policy measures and maintaining public health. The first line of defense against this virus has been healthcare systems, and their ability to be flexible and adapt to ever-changing circumstances on the frontlines of healthcare.

COVID-19, Healthcare System Resources, and Pandemic Preparedness

COVID-19 has presented states with a challenge of balancing their institutional and healthcare system responses. In the early months of the pandemic (pre-vaccine), many healthcare systems repurposed various antiviral agents such as ritonavir, remdesivir, and even chloroquine to prevent and control the spread of the virus. To control inflammation of the upper respiratory system, tocilizumab—a monoclonal antibody treatment—was also popular. While many states used a combination of different pharmacological therapies to treat COVID-19, their success remains a mixed bag (Scavone et al. 2020). Emerging from these conflicting studies, however, was a general theme of "preparedness".

Pandemic "preparedness" results from a combination of political and institutional choices, but it is, at its core, a healthcare system problem. The capacities of healthcare systems across the world directly influence a state's ability to maneuver to an effective response to the virus to lower new case rates and reducing COVID-19 related deaths. Looking to previous diseases across Asia, what allowed South Korea, for example, to suspected infections of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) was the capacity of their healthcare systems to detect, quarantine, and treat individuals in a timely manner (Lee et al. 2013). Writing about disease preparedness, Herlihey et al. (2016) noted that what impacted the ability of health science centers (hospitals and trauma centers) to treat patients

with highly infectious diseases was the availability of high-quality personal protection equipment (PPE). Thus, hospitals must develop protocols to evaluate the combination of PPE suitable to their needs when facing a health crisis.

Similarly, Gudi and Tiwari (2020) noted that hospitals, especially those in the United States, need to manage the stockpiling of necessary personal protective equipment and engage in disaster-planning to head off future waves of the virus. They concluded that "preparation is a key, and it should be a major lesson to be learned from COVID-19." They further noted that hospitals with many intensive care units and hundreds of general beds help accommodate surges in patients. But preparedness doesn't just include the physical capital of hospitals and various healthcare systems. Information management and education are just as important. During the global AIDS crisis and pandemic, one of the most effective tools at controlling the spread of AIDS was a coordinated information effort from hospitals and the U.S. Centers for Disease Control (Bush and Davies 1989).

Healthcare systems that are better able to accommodate massive surges in patients and those that centralize decision-making related to disaster planning are better positioned to prevent the future spread of COVID-19. We thus expect that states with more healthcare system resources (by most traditional measures such as number of hospital beds and ICU units available) are better able to control the spread of the virus. While this is not the only metric by which to evaluate COVID-19 policy response, it does indicate which states, on average, spend more money on their healthcare systems allowing them to address new cases and prevent future infection. This leads us to our first formal hypothesis:

> *H1: States with more available hospital beds will have lower COVID-19 death rates than those states with fewer hospital beds.*

The availability of general hospital beds is as a good metric for analyzing the quality of hospital management because it indicates whether states invest a lot (or a little) in their healthcare system infrastructures (Pecoraro et al. 2021). In France and Germany, investments in increased levels of healthcare investment (as a total percentage of their GDP) meant there were more hospital beds and hospital personnel to deal with patients as the COVID-19 crisis raged on. In contrast, Spain and Italy could not rely on these structural components of their healthcare systems to deal with massive influxes of new COVID-19 patients because they lacked significant investment in those areas (Pecoraro et al. 2021). There is a clear divide between these groups of states in how the availability of hospital resources—specifically open hospital beds—affected their ability to manage the early phrases of the virus.

However, COVID-19 response moves well-beyond the capacities of health systems. While health systems, to some extent, operate independently of the broader political environment that they are partially the products of, political decision-makers and often intractable political institutions constrain them. COVID-19 is a healthcare issue, but it is also a political issue because while hospitals treat patients on one level, public policy decisions made to flatten the curve may also have independent effects—at least that is what policy-makers assume. Decisions related to food security, supply chain management, vaccine production, and lock-down restrictions are the realm of public policy and political decision-makers, not doctors (Scott et al. 2020). The next section examines how institutions and politics play a role in managing COVID-19 from a public policy perspective.

Political Institutions and Patterns of Democracy

One of the central research questions motivating this study is: Do institutional arrangements matter for addressing a massive public health crisis in addition to the quality of a

healthcare system? Arend Lijphart (2012) in his foundational work, *Patterns of Democracy,* outlined two distinct faces (or "patterns") of democracy that linked to divergent policy outcomes in a variety of areas. We can evaluate states, he argued, along two dimensions—an executive-parties dimension (also called the joint-power dimension), and a federal-unitary dimension. The first dimension is horizontal because it deals with institutional relationships among different branches of government. In contrast, the federal-unitary dimension is vertical because it classifies states based on the power relationships between different *levels* of government (e.g., between local/municipal government and federal government).

Using these two dimensions, Lijphart classified over thirty-six different democracies into two types. The first type is majoritarian democracy. These states are characterized by single-party majority cabinets, an executive-legislative relationship in which an executive is dominant, two-party systems, disproportionate electoral systems, interest group pluralism, and unitary power structures with rigid constitutions and unicameral legislatures. The second type is consensus democracy. They are characterized by broad multi-party coalitions, a balanced executive-legislative relationship, multi-party systems, proportional electoral systems, corporatist interest group structures, and federal power structures with flexible constitutions and bicameral legislatures.

While such classification is undoubtedly interesting as a taxonomical exercise, it also has substantive importance because we can use it to hypothesize how a system generates policy outputs. Using a variety of indicators such as the inflation rate, GDP per capita, government effectiveness, and the quality of the rule of law, Lijphart concluded that consensus democracies perform much better in all areas—at least on the executive-parties dimension (Lijphart 2012, p. 263). Using the same consensus-majoritarian framework, Lijphart and Crepaz (1991) found that

interest group corporatism (that is, whether large interest groups like labor unions are funded by the government and have a permanent place at the policy negotiating table) correlated with increased economic openness (see also Crepaz 1996). Using Lijphart's index of majoritarian-consensus democracy, Crepaz found that consensus democracies that permit flexible constitutional structures lower both the unemployment and inflation rates. Ganghof and Eppner (2019) are more critical of Lijphart's measures and take issue with the conceptualization and operationalization of the executives-parties dimension. However, even when tweaking these measures to be more consistent with the themes of accountability and representation, the basic empirical correlates of it remain the same: Consensus democracies, in addition to their high performance on macroeconomic indicators, also increase voter turnout and lower capital punishment.

The intuition behind why consensus democracies would perform better than majoritarian democracies in a variety of policy contexts rests in a notion of political *accommodation and inclusion*. Lijphart conceptualized the consensus/majoritarian divide largely on institutionalist grounds. That is, some institutions or set of institutions better accommodate a diversity of viewpoints into the policy making process than others. For example, consider the party systems in the United States and Switzerland. In the United States, the single-member district plurality electoral system encourages a two-party system because second-place vote winners get nothing. This winner-take-all institutional arrangement is, as Lijphart contended, an almost proto-typical example of majoritarian democracy. Once in government, either the Republican Party or the Democratic Party will receive a bare-minimum majority of votes to govern. When this happens, the majority party can systematically exclude their opposition—and by extension tens of millions of opposition voters—from any meaningful influence on legislation. In contrast, Switzerland's

consensus-model of government (to name one prominent examples) uses a mix of single-member plurality voting in six cantons and open-list proportional representation for the other twenty cantons. Because of these electoral system rules, twelve parties have representation in the Swiss National Council. Because the National Council is composed of only 200 seats, parties (or a coalition of parties) need *at a minimum,* 101 seats to form a government. Because no single party is even close to this number, they need to form multi-party coalitions that integrate a diversity of voices into political and government decision-making processes. Manuel Fischer (2014) in his extended analysis of Swiss policymaking, concluded that when the Swiss government had a strong, multi-party coalition, it was better at both making policy and engaging in policy change. Including diverse voices in the decision-making process reduces the energy needed to overcome collective action problems and solve coordination issues—even if those barriers to fast policy making are large (see Tsebelis 1995).

While most of the work detailing a link between consensus-institutions and policy outputs focuses on economic policy, these relationships may also hold when examining health crises. The economic elements of democratic performance are intimately linked with COVID-19 because the virus affects every aspect of government and social life. The immediate economic consequences of COVID-19 were devastating. As states implemented stringent lockdown procedures, GDP contracted, inflation rose, and supply chain issues plagued (and continue to plague) the transportation and trading of consumer goods. According to prior research, these are all issues that consensus democracies should handle better because of their more communal approach to politics. A state's ability to manage these macroeconomic policies also serves as a test of their ability to handle a public health crisis because changes to policies that restrict social

contact (i.e., “social distancing”) must also address the deleterious effects it would have on economic productivity.

Consensus Democracies and COVID-19 Policy Outcomes

Recent research examining the link between COVID-19 health policies and political institutions have focused exclusively on the vertical dimension of democracy (i.e., the federal-unitary dimension). For example, Bandelow et al. (2021), in a case-study analysis of France and Germany, found that while France centralized decision-making around President Macron in the early days of the global outbreak, he was less effective at controlling the spread. In contrast, Germany, with its federalized system of local governance, adopted more heterogenous policy initiatives and had significantly lower death rates. Other work suggests a conditional relationship between federalism and policy response. Federalism plays an important role in mitigating death rates and new case rates, but only when such states interpret the severity of the crisis in ways that require a multi-level response (Buthe et al. 2020). While some studies have detailed components of the horizontal dimension like the executive power vis-à-vis legislature and how well-established the governing party is (see Giraudy et al. 2020 and Maor and Howlett 2020), I could not find a study examining the specific influence of consensus institutions on health policy.

Clearly institutional arrangements matter. They matter because they delineate the boundaries of decision-making authority within complex government systems that contribute to government stability and the ability of such governments to adapt to ever-changing public health conditions (Janssen and van der Voort 2020; Vampa 2021). Perhaps the reason Lijphart found no effects of vertical institutions on democratic performance is because he primarily on macroeconomic indicators like GDP, inflation, and unemployment—policy domains that are equally important to all levels of government and that can also be effectively regulated by all

levels. COVID-19 affects all those things, but there is also a significant social component to the crisis that gets lost when evaluating these traditional indicators.

While COVID-19 has slowed economic growth, it has also created significant social consequences that extend far beyond the rise in consumer prices. One of the more damaging consequences of COVID-19 has been social isolation (Anastasiou and Duquenne 2021). As states moved to curtail a rapidly spreading virus, it has strained social relationships resulting from physical social distancing. This isolation has taken a toll on mental health and wellbeing as well as interfering with the normal daily routines of families (Galea et al. 2020 Nicola et al. 2020). As the economic effects of COVID-19 have dispersed unequally, so too have the social consequences. Even *within* the same country, isolation measures affect different groups and sub-populations in non-trivial and significant ways (Berg and Morley 2020). Here, consensus democracies may perform better than majoritarian democracies because of the communal nature of institutional arrangements. Institutions that allow for greater representation in government and opportunities for input into the policymaking process also foster greater feelings of cooperation.

The fundamental construct underpinning the consensus vs. majoritarian divide are cooperation vs. antagonism. If different sectors of people experience the pandemic differently, then consensus democracies are better positioned to overcome those challenges because institutional arrangements foster cooperation whereas majoritarian institutions promote division through their winner-take-all approach to governance. However, previous research analyzing the link between COVID-19 outcomes and institutions disproportionately focuses on federalism even though horizontal institutions matter just as much. When looking at coalition theory (see Laver and Budge 1992 for a good review), effective policy making across a wide range of policy areas like social policy and foreign policy depends on coalition structure—a component of

horizontal institutions. Debates and bargaining over coalition arrangements determines the direction of policy for the foreseeable future: "parties have an eye to the policy outputs of the eventual government when they bargain over coalition formation." As Laver and Budge further noted, when the party competition space contains over two dimensions (that is, moving beyond basic left-right ideological considerations), multiple parties—who may or may not be close to each other—will affect government policy outcomes.

Extending this logic, party systems that accommodate more parties are, by the nature of the coalition bargaining process, more cooperative and should be better equipped to manage the pandemic. This brief discussion of coalition bargaining demonstrates how open party systems (a component of Lijhart's original consensus democracy measures) reflect the underlying cooperative vs. antagonistic political and social structure of states that influence policy outcomes. We expect this relationship to also apply in managing COVID-19.

Summary

We have discussed two competing explanations for the disparity in success (or failure) of states to manage the COVID-19 crisis. On the one hand are investments in the health sector which manifest as the availability of front-line hospital resources (e.g., hospital beds) to address the ever-increasing infectivity of the virus. On the other hand, institutional arrangements may matter in more subtle ways. Previous research shows that more federal systems (i.e., *vertical* democratic institutions) are better at formulating policy because they address regional concerns. Power sharing among levels of governments means different regions and localities can address local conditions in forming policy strategies. We expect federal democracies to how lower COVID-19 deaths.

H2: Federal democracies will have lower COVID-19 death rates than unitary democracies.

However, these analyses miss the key relationships among different branches of government and how features of party systems and cabinet structures also play a role in policy formation. Those systems that allow for the diversity of inputs into the policymaking process are better positioned to address public health crises because of their cooperative nature.

H3: Consensus democracies will have lower COVID-19 death rates than majoritarian democracies.

The Inter-relationship between Institutions and Policy

We also predict there to be an interaction effect between consensus democracy and healthcare system resources. The literature on pandemic preparedness and healthcare system resources identifies the main features of states conducive to minimizing the impact of public health crises in a variety of contexts. In such a situation, healthcare system resources are more important than political institutional features because they deal directly with front-line interaction with infected patients. In short, when healthcare resources are plenty—there is widespread availability of hospital beds, ICU rooms, and PPE—the degree to which institutions favor cooperation and consensus should matter less. In contrast, when healthcare investments are scarce, we expect the extent to which institutions favor cooperation and consensus building to matter more. rather than the constitutional rules of electoral systems. In majoritarian systems with low healthcare resources, we expect that undergoing transitions to more consensus-based institutions will have a significant impact in reducing death rates because they compensate for low-hospital resources. In contrast, there should be no effect of institutional transition when states have plenty of health resources at their disposal.

H4: The effect of consensus institutions on lowering COVID-19 death rates is conditioned on the availability of hospital beds.

Polarization and Democracy

Any discussion about the nature of democratic institutions—especially horizontal ones that capture the characteristics of party systems—must also grapple with the possibility of political and social polarization. Moral and Best (2022) distill a straightforward definition of polarization: "Polarization, in a very basic sense, captures the degree of policy or ideological divisions among citizens, elites, or parties." Growing out the work of Andrew Downs's (1957) spatial model, polarization is a phenomenon in which parties—and broader society— are aligned somewhere on a Left-Right continuum. Beyond this placement, elites and parties simplify politics by offering an "either-or" package of policy initiatives to the public that seek to divide citizens into two diametrically opposed camps (McCoy and Somer 2021).

But is polarization harmful to democratic societies? The answer to this question is not so clear cut. Polarization does have serious negative consequences for various democratic societies—especially those characterized by high social conflict. Citizens refuse to agree on certain objectives and become sequestered in antagonistic social groups that destabilize communities. In the United States, intense polarization leads some citizens to relocate to cities and communities with more like-minded people further exacerbating this problem. Such extreme polarization has the pernicious effect of reinforcing a form of tribalism that is ultimately destructive (Sunstein 1999). Clustering into antagonistic groups that refuse to work together is the ultimate consequence of intense social polarization. However, not all polarization is bad. As Giovanni Sartori (1976) noted in *Parties and Party Systems,* moderate pluralism is the intermediate step prior to full polarization characterized by narrowed social groups and parties.

Yet polarized pluralism, he argued, was destructive because it leads some groups and parties to adopt extreme positions to maintain relevance and sustain operation. Thus, while polarization does have serious consequences, divisions among social groups are not inherently negative—in fact, they are relatively common.

Consensus Institutions, Healthcare Systems, and Polarization

If the unifying link between institutions and society is cooperation vs. antagonism, then this relationship also matters when addressing issues of the healthcare system. Earlier we described a situation in which the effect of consensus democracy was, in part, contingent on the healthcare system resources (operationalized as the availability of hospital beds per one thousand people). This relationship works the same way for polarization. In highly cooperative societies, then differences in available health resources matter less because there is a generally agreed upon direction of public policy. Low polarization means there are fewer political barriers to overcome when dealing with a crisis like COVID-19. Polarization captures this nuanced social element that often gets sidelined in discussions about patterns of policymaking in cross-national perspectives. Our expectation is that polarization works in the same general direction as the effect of consensus-based political institutions. But how does polarization connect to institutions more generally?

Lijphart's typology of consensus democracies, as noted earlier, have decision-making structures that allow for a diversity of inputs into the policy process. Such structures include coalition governing cabinets, electoral systems that are more representative, and a relative balance of power in the executive-legislative relationship, among other features. However, Lijphart operationalized system-level polarization by including a measure of the effective number of parties within any system; thus, his measure reduces to a dichotomous classification

between two-party and multi-party systems. While useful, it misses much of the nuance of polarization described by both Dalton (2008) and Moral and Best (2022). That is why much of early literature equates more open political systems (that is, more consensus-based systems with rules that allow for multiple parties) with increased polarization. In fact, this relationship works in reverse.

Polarization is another way to capture the cooperative vs. antagonistic dynamic between individual actors in democratic societies. The intuition follows that of the consensus-majoritarian divide. In states characterized by strong cooperation and feelings of community (i.e., less polarization), they are more likely to band together to find policy solutions to the ongoing health crisis.

> *H5: Higher political polarization will produce higher COVID-19 death rates. Conversely, lower polarization will lead to lower COVID-19 death rates.*

The next section reviews the specific policy instruments that democratic societies have at their disposal in managing the COVID-19 crisis. Specifically, we address the role of civil liberties restrictions and focus a discussion on a central question: Do civil liberties restrictions improve health outcomes?

The Restriction of Civil Liberties as Policy Instruments

The previous discussion highlighted that consensus democracies *should* perform better with lower COVID-19 death rates. They perform better because consensus institutions allow for more diversity in the decision-making process where individuals and political decision-makers can better advocate for minority citizens and represent smaller geographic districts—that is, politicians attuned to local conditions impact the national direction of policy. But what policies

have states implemented to address the COVID-19 pandemic? The first step has been the restriction of civil liberties (Mandal et al. 2021).

Before the development and implementation of mass vaccination programs, the first step was the restriction of civil liberties, also referred to as non-pharmacological disease interventions (Alvi et al. 2020; Odusanya et al. 2020). These measures included (but are not limited to) social distancing, mandating the use of personal protective equipment (e.g., masks or gloves) in at-risk environments, mandatory testing and contract tracing, and extensive travel restrictions. In the United States, for example, the secretary for the department of Health and Human Services (HHS) Alex Azar declared a national public health emergency on January 31st, 2020, which gave him broad powers to implement strategies to mitigate the potential spread of COVID-19. These measures effectively circumvented the US Constitution, which grants broad public health powers to the individual states (Gostin and Hodge 2020). In France, Macron implemented strict lockdown procedures on March 17th that included closing shops and restaurants, travel restrictions, public awareness campaigns, curfews, and school closures, among other instruments (Campano et al. 2020; Hassenteufel 2020).

Because this virus was novel, many states adopted similar policy instruments to control the spread. CoronaNet (Cheng et al. 2020) records over 8,000 COVID-19 related policy announcements in 190 countries. Among the top measures were external travel restrictions, quarantine, tracking and testing, and restrictions on mass gatherings. Despite imposing these measures, some question whether such measures were necessary given that scientists (at this point) knew very little about the virus, both in terms of its infectivity and its general epidemiology.

However, recent research has shown that specific non-pharmacological interventions like social distancing, mask wearing, and proper hand hygiene reduce the spread of the virus (Ar et al. 2020). However, the effectiveness of these measures was also contingent on how quickly countries implemented these measures and the compliance with them by the broader public. In another study, Koo et al. (2020) found in a model-building exercise of Singapore that imposing movement restrictions for up to 80 days reduced the projected number of new cases between 78.2% and 99.3%. Thus, in the early months of the virus, imposing civil liberties restrictions was an effective governmental policy response to containing the spread of COVID-19 and, for a long while, citizens were accepting of these measures (Nyanmutata 2020).

Between Public Health and Political Institutions—The Role of Civil Liberties

Debating, forming, and implementing public policy is a political act. While the public has some general input into the policy process, it is ultimately the decision of the legislators themselves that dictates the usage of various policy instruments to achieve certain goals. Despite the well-reasoned logic that the restriction of civil liberties are efforts to address a public health crisis, they may signal a more sinister set of future policy initiatives.

One cornerstone of democratic theory and its advocates, such as Robert Dahl (1956), was that the actions of government should reflect the underlying will and preferences of the broader mass public—if such a thing exists. It is the duty of government to protect the citizen's basic right to expression and political association. As Diamond (2002) implied in his early work, what distinguishes liberal democracy from electoral democracy (and other hybrid regimes) are political mechanisms that allow for the protection of civil liberties and civil rights. Civil liberties form the bedrock foundation of modern democratic states because they allow for social and political equality while protecting unwanted government intervention in the daily lives of

citizens. It is important that there are protections against a government's ability to dictate—and mandate by force—a certain way of living. The ability of a free press to engage in critical journalism without fear of political reproach or attack is necessary in developing an information environment conducive to an effective and vibrant civil society (Schmitter and Karl 1991).

Civil liberties are important, and we should meet any attempt to limit them with a dose of skepticism. Because declaring public health "emergencies" allows governments to circumvent constitutional constraints on their power, we should pay close attention to their continued use and evolution over time during the COVID-19 pandemic. Two standout cases—Poland and Hungary—exemplify how such measures can have a negative impact on a democratic society. Both countries have experienced an erosion of democratic norms in the last ten years. Since the presidential election in Poland in 2020, the conservative Law and Justice Party has continued to attack the court system while undermining the rule of law and politicizing "free" media networks. Since the beginning of the COVDI-19 pandemic, the Law and Justice party has accelerated the use of such restrictions while maintaining a public message of protecting public health. Similarly, Viktor Orbán's conservative-national Fidesz party passed new laws that gave the government power to issue new decrees under the public health emergency rules. One of these new decrees is the ability to jail (up to five years) anyone spreading "misinformation" about the pandemic—of course, the government determines what counts as "misinformation" (Orzechowski et al. 2021).

Both Poland and Hungary have majoritarian institutions and thus it is no surprise that they would rush to implement extensive restrictions of civil liberties to combat the pandemic. Compared to other consensus-based democracies, majoritarian democracies seem much more willing to implement sweeping measures including travel restrictions and severe lockdown

requirements (i.e., not being allowed to leave your place of residence except under certain conditions) more quickly (see Hassenteufel 2020 for a review of French lockdown procedures during Wave I of the pandemic for a good review). This discussion has highlighted an important part of political decision-making during COVID-19. Lawmakers face an almost impossible decision: Do they implement sweeping civil liberties restrictions to combat the spread and risk public outrage or do they take a more measured, cautious approach which entails more short-term hardship? During the COVID-19 pandemic, civil liberties are the linchpin connector between public health and political institutions, and their restriction often become the most important policy instrument governments have at their immediate disposal.

> *H6: Democracies that impose more civil liberties restrictions will have lower COVID-19 death rates.*
>
> *H7: Consensus democracies will impose **fewer** civil liberties restrictions as a policy instrument to combat COVID-19.*

Research Design

Our analysis considers only those countries in Lijphart's (2012) *Patterns of Democracy* that include thirty-five countries (we removed the Bahamas because of a lack of available data). Our unit of observation is the country-year spanning those thirty-five democracies from 2019 to 2022. Our total sample size is 105 country-observation years. Because our focus is evaluating the impact of the horizontal dimension of democracy (i.e., the joint-power dimension), using Lijphart's sample is appropriate and further allows for direct comparison with his results. To test the dual-impact of political institutions and public health systems on COVID-19 outcomes, we use a unique combined data set that includes Johns Hopkins University's daily COVID-19 time series tracker along with Coppedge et al.'s (2022) most recent V-Dem 12.0 dataset. The benefit of combining these two datasets is that it allows us to assess the quality of healthcare systems

alongside the unique institutional indicators found in V-Dem 12.0. We aggregate JHU's data up to the country-year to make it comparable with the V-Dem 12.0 data. Naturally, such data aggregation loses nuance—especially with day-to-day fluctuations in death and case rates—but this is a necessary step. There are a variety of different institutional measures one could test, and this combined dataset offers much in terms of flexibility and potential expansion.

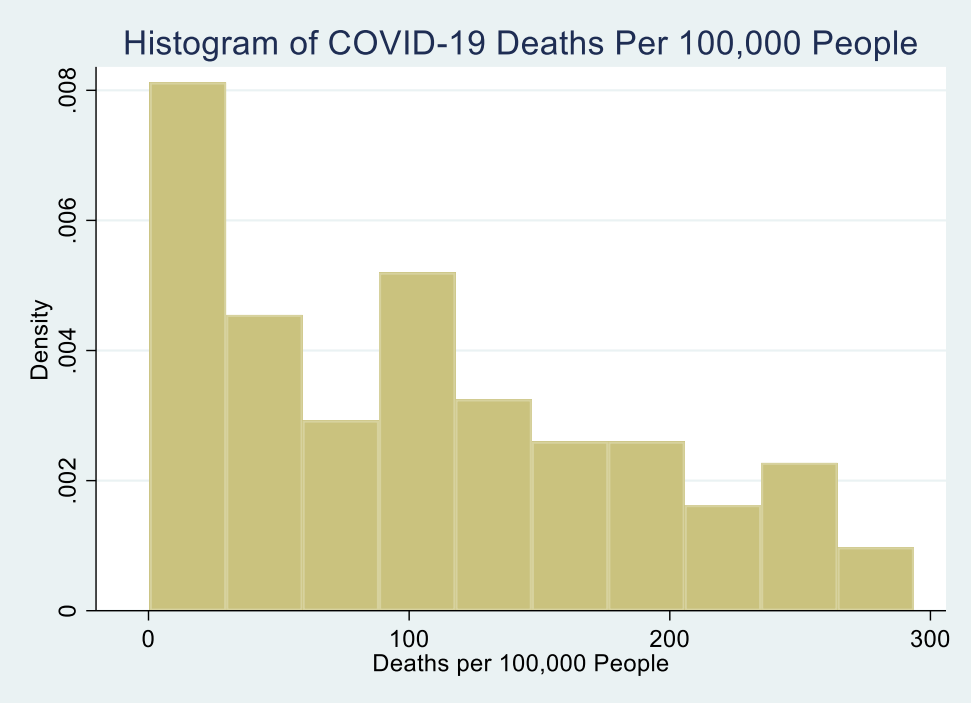
Dependent Variable

There are many potential outcome indicators one could use for assessing the effectiveness of different policy instruments on controlling the spread of the virus. In this study, we use total deaths attributed to COVID-19. This measure, based on the JHU data, is preferable to other traditional death rate measures because it assesses directly deaths related to COVID-19 complication and thus circumvents issues of comorbidity or previous health condition status. We then standardize this measure to COVID-19 deaths per 100,000 people. This will be our main dependent variable. Several alternative indicators exist, such as excess mortality rates, vaccine deployment, testing capacities that also relate directly to the effectiveness of public health systems and political institutions, however deaths are the most visible (and often the most important) outcome of interest. Moreover, with other more specific indicators found in the JHU data—for example, boosters per 100,000 people and total vaccination rates—suffer from potential missing data problems and reduces our sample size. We present summary statistics and a histogram of the dependent variable in Table 1 and Figure 1 respectively. Based on these statistics and visualization, the dependent variable is positively skewed containing non-negative integers. Furthermore, it is over dispersed—that is, the variance (82.067722 squared) is *much* higher than the mean.

Table 1: Summary Statistics of Dependent Variables (Deaths per 100,000 People)

Variable	*Observations*	*Mean*	*Std. deviation*	*Minimum*	*Maximum*
Deaths	**105**	**104.0221**	**82.067722**	**.4876812**	**293.6746**

Figure 1: Histogram of Deaths Per 100,000 People



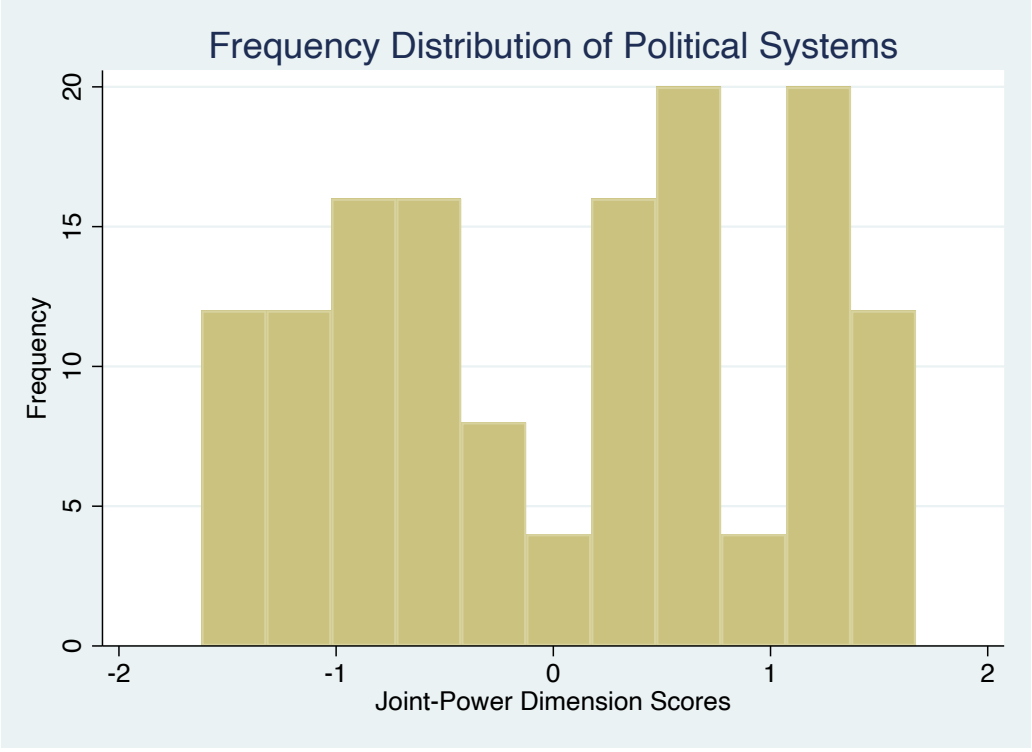
Independent Variables

To assess the impact of institutional arrangements on COVID-19 outcomes, we use Lijphart's measure of consensus democracy on the joint-power dimension (executive-parties dimension). This joint-power dimension scores are a composite index of five variables that include measures for: (1) effective number of parties, (2) minimal winning one-party cabinets, (3) executive dominance over legislature, (4) interest group pluralism, and (5) electoral

disproportionality. The scores on the joint-power dimension range from -2 (more majoritarian democracy) to 2 (more consensus democracy).

Some scholars have criticized these measures for their crudeness (see Taagepera 2003; Coppedge 2018; Ganghof and Eppner 2019); however, attempts at adjusting and re-conceptualizing these measures in different ways to fit with Lijphart's theme of democratic accountability have yielded only modest changes to his initial results showing that the original consensus democracy measures are reliable even in the face of some conceptual validity problems. For example, the correlation coefficient between the Ganghof and Eppner (2019) scores and the Lijphart scores is .95 without the corporatism measure and .91 with it. Additional results using these alternative measures are in Appendix B. Figure 2 presents the distribution of the consensus democracy scores among our 105 country-year observations.

Figure 2: Frequency Distribution Histogram of Political Systems



Our second main independent variable comes from the Oxford COVID-19 Government Response Tracker that details specific policy responses by various countries around the world. Specifically, the measure we use is a composite index that is the average of these nine indicators: (1) school closing, (2) closing workplaces, (3) canceling public events, (4) restrictions on mass gatherings, (5) closing public transport, (6) stay at home orders, (7) restrictions on internal movement, (8) international travel bans, and (9) public information campaigns. This index has been rescaled from 0 to 100, so that higher values indicate more restrictions for ease of comparison.

Our third main independent variable is hospital beds per one thousand people, which is a proxy measure for assessing the quality of healthcare systems. We rely on this measure because it is an accurate description of the funds of healthcare systems to address both COVID-19 patients and general hospital admittances. States with more available resources (e.g., states that are wealthier) spend more on their health infrastructure and thus have more hospital beds available to the population. Data limitations also prevent us from using more meaningful and nuanced health indicators. For example, data for ICU patients per 100,000 people are only available for a select few countries and using these data in our models with distort and bias outcomes. Consistent with previous research on COVID-19 and health infrastructure, the number of hospital beds per one thousand people is a good proxy for the quality of healthcare systems.

Our final independent variable is polarization. We utilize an interval measure of polarization from the V-dem 12.0 dataset. This question asked, “How would you characterize the differences of opinions on major political issues in this society?” The response options range from 0 to 4. A response of 0 indicates “serious polarization. There are serious differences in opinions in society on almost all key political issues, which result in major clashes of views.” A

response of 4 indicates "No polarization. There are differences in opinions but there is a general agreement on the direction for key political issues." These have been scaled to an interval measurement between -2.5 and 2.5 that keeps the same direction of the responses. Countries with negative values are more polarized while countries with positive values are less polarized. This question captures the level of perceived social and political polarization in our countries of study.

Control Variables

We include several societal control variables that might influence COVID-19 deaths and include GDP per capita, median age of the population, population size (log transformed), and cases per 100,000 people. There were other variables considered for inclusion, like human development index scores, life expectancy, and percentage of population aged over 70; however, because of potential issues of multicollinearity, we had to remove them. Results of a collinearity diagnostics test using variance-inflation factors are included in Appendix A as well as a matrix of correlations for those variables included in our main models. For controls included in the model, we have the following expectations. GDP per capita should show a negative relationship with deaths per 100,000 people. As the size of a state's economy grows, so too should its general capacity to prevent the spread of the virus. Cases per 100,000 people are positively related to deaths—as cases go up, so should deaths. The median age should be positively related because COVID-19 disproportionately affects the elderly who may already have compromised health or immune systems. Finally, population size should also be positively related to deaths. As the size of the population increases, there exist more contact points to spread the virus.

We include another control variable for the vertical dimension of democracy. The horizontal dimension and vertical dimension of democracy and empirically and conceptually orthogonal (their correlation coefficient is -0.0171) and capture different institutional

characteristics. Because vertical institutions are central to Lijphart's analysis, we should also include them in this analysis and provides proof of concept to previous case studies analyzing federalism in the context of COVID-19 outcomes. The vertical dimension scores are measured and indexed on five different components. The first component measures whether the state has a centralized or federalized government. The second component measures whether the concentration of legislative power is in a bicameral vs. unicameral legislative structure. The third component measures whether the written constitution can be amended by a simple legislative majority or through extraordinary measures (what Lijphart calls constitutional "flexibility"). The fourth component measures the presence of judicial review on the constitutionality of passed legislation. The fifth component measures the relative independence of a state central bank. The range of this variable is generally consistent with the range on the joint-power dimension with scores between -1.65 and 2.33.

Plan for Analysis

Because our primary outcome variable of interest is positively skewed while containing non-zero and non-negative integers, we must use a modeling strategy that takes this data-structure into account. Because the diagnostics reveal that the variance is much higher than the mean, the most appropriate strategy is to employ negative binomial count models that consider variable overdispersion (Lindén and Mäntyniemi 2011). In our final model where we evaluate the impact of several variables on the restriction of civil liberties, we use standard Pooled Ordinary Least Squares (OLS) regression. Normality tests (e.g., Shapiro-Wilks tests) indicate that even though such a variable is non-continuous and bounded between 0-100, the data approximates a normal distribution, and the tests do not indicate any bias in estimating coefficients using OLS.

Results

To evaluate our data, we employ a negative binomial regression modeling strategy with robust standard errors to control for any heteroscedasticity in our data. Table 2 on the next page displays the initial results of our model with deaths per 100,000 people as our primary dependent variable of interest. We build our analysis using a stepwise, iterative modeling process. The first four models test the independent effect of our four primary independent variables (hospital beds per one thousand people, joint-power dimension scores, civil liberties stringency index, and polarization) with all controls to isolate their effect. In model 1, there exists a significant relationship between the joint-power dimension (i.e., horizontal political institutions) and death rates. In model 2, hospital beds are not significantly related to COVID-19 deaths, which is surprising given how fundamental hospital resources are on the frontlines of fighting the virus. In model 3, the stringency index is significant but in the *opposite* of our hypothesized direction—which is a surprising and consistent theme across the models. In model 4, polarization has a massive impact on COVID-19 death rates. As polarization decreases, so do COVID-19 deaths. While some of these predictors may not be significant on their own, in model 6 that includes the interaction term, all these variables become significant. It is also important to note that while the federal-unitary dimension was not our theoretical focus, there does seem to be a relationship with death rates but in the opposite direction as model two demonstrates.

Moving to model 5, only hospital beds and polarization are significant at the 0.05 level and below; the joint-power dimension scores and stringency index seem to have no effect. We interpret these coefficients in much the same way as logit regression. A one-unit increase (or decrease) in polarization, produces a beta-sized coefficient change in the expected log count COVID-19 deaths.

Table 2: Negative Binomial Regressions of Political Institutions, Civil Liberties Restrictions, Healthcare System Resources, and Polarization on COVID-19 Death Rates.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Joint power	-0.164**				-0.067	-0.600***
	(0.075)				(0.080)	(0.178)
Hospital beds		-0.092			-0.107**	-0.105**
		(0.066)			(0.051)	(0.049)
Stringency index			0.017**		0.010	0.012*
			(0.008)		(0.007)	(0.007)
Polarization				-0.368***	-0.342***	-0.409***
				(0.082)	(0.083)	(0.081)
Federal dimension	0.129	0.209*	0.092	0.092	0.165*	0.066
	(0.086)	(0.119)	(0.090)	(0.082)	(0.096)	(0.099)
Cases	0.000**	0.000**	0.000**	0.000*	0.000**	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population (log)	0.032	0.006	0.024	-0.113*	-0.147**	-0.155**
	(0.054)	(0.068)	(0.060)	(0.068)	(0.067)	(0.068)
GDP per capita	-0.000	-0.000	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median age	0.026**	0.030**	0.006	0.016	0.030**	0.030**
	(0.013)	(0.014)	(0.016)	(0.013)	(0.015)	(0.014)
2021	0.592**	0.597**	0.561**	0.799***	0.702***	0.691***
	(0.263)	(0.281)	(0.281)	(0.241)	(0.250)	(0.237)
2022	0.250	0.257	0.433	0.669*	0.595*	0.580*
	(0.409)	(0.454)	(0.448)	(0.361)	(0.357)	(0.335)
Joint-power x Hospital beds						0.152***
						(0.053)
Constant	2.170*	2.840**	2.015*	4.645***	4.391***	4.338***
	(1.122)	(1.234)	(1.162)	(1.124)	(1.090)	(1.131)
lnalpha	-0.337**	-0.330**	-0.349***	-0.443***	-0.497***	-0.578***
	(0.147)	(0.138)	(0.134)	(0.150)	(0.150)	(0.146)
N	105	105	105	105	105	105
AIC	1164.750	1165.500	1163.248	1152.673	1152.618	1145.864
Pseudo-R^2	0.0351	0.0344	0.0363	0.0453	0.0504	0.0577

Note: * $p < .1$, ** $p < .05$, *** $p < .01$

Moving to model 5, only hospital beds and polarization are significant at the 0.05 level and below; the joint-power dimension scores and stringency index seem to have no effect. We interpret these coefficients in much the same way as logit regression. A one-unit increase (or decrease) in polarization, produces a beta-sized coefficient change in the expected log count COVID-19 deaths. Because the negative binomial model uses the base of the natural logarithm (*e*) as the link function for this class of count models, we can rearrange the mathematical expression to present the results as a percentage change in expected count. Thus, we can take natural logarithm base *e* and raise it to the coefficient number for polarization (-0.34233). So, $e^{(-0.34233)}$ is 0.7101. Next, we finish the expression as [(0.7101-1) *100 = -28.99]. We then interpret this final number as a percentage. A one unit increase in polarization (which again, means *less* polarization with the way V-Dem coded this variable) produces a 28.99 percent *decrease* in COVID-19 deaths. Table 3 below presents these percentage change results (coefficients that are statistically significant past the 0.1 level are bolded).

Table 3: Percentage Change in COVID-19 Deaths for Model 5

Predictors	*β*	*z*	*P>z*	*%*
Joint-power	-0.06660	-0.836	0.403	-6.4
Federal-unitary	0.16489	1.711	**0.087**	**17.9**
Hospital beds	-0.10697	-2.101	**0.036**	**-10.1**
Stringency index	0.01006	1.426	0.154	1.0
Polarization	-0.34233	-4.108	**0.000**	**-29.0**
Cases	0.00003	2.376	**0.017**	**0.0**
Population	-0.14717	-2.209	**0.027**	**-13.7**
GDP per capita	0.00001	1.568	0.117	0.0
Median age	0.03005	1.985	**0.047**	**3.1**
2021	0.70232	2.805	**0.005**	**101.8**
2022	0.59543	0.59543	1.667	0.095

Applying the same formula to the joint-power dimension scores (that is, a one-unit increase towards more consensus institutions) produces a 6.4 percent decrease in expected count of COVID-19 deaths. While this coefficient is not significant at any level, we must appreciate that the dependent variable in this case are lives. And a 6.4 percent decrease in deaths is, all things equal, a substantively meaningful decrease in mortality. For hospital beds, a one-unit increase in hospital beds per one thousand people decreases expected count of COVID-19 deaths by 10.1 percent. Across all models, cases are highly significant, but the coefficient is near 0. This means that even though the coefficient is significant, after controlling for other factors, it has little influence on COVID-19 death rates even though they are in the hypothesized direction.

Model 6 includes an interaction effect between hospital beds and the joint-power dimension. The intuition behind this model is that consensus democracy may only matter when hospital resources are scarce. Figure 3 plots the marginal effects graph of this interaction. When hospital resources are low (that is, a low number of hospital beds per one thousand people), as one moves from a majoritarian system to a consensus system, there is an appreciable decrease in the expected count of COVID-19 deaths. On the other hand, there is no real effect of changing consensus scores when hospital resources are already high. When including this interaction effect, the primary independent variables become significant. The interaction seems to have suppressed the magnitude of the other primary independent variables. In Table 4 on the next page, we present another percentage change table for model 6.

Figure 3: Predictive Margins Plot of Hospital Beds and Consensus Democracy Scores

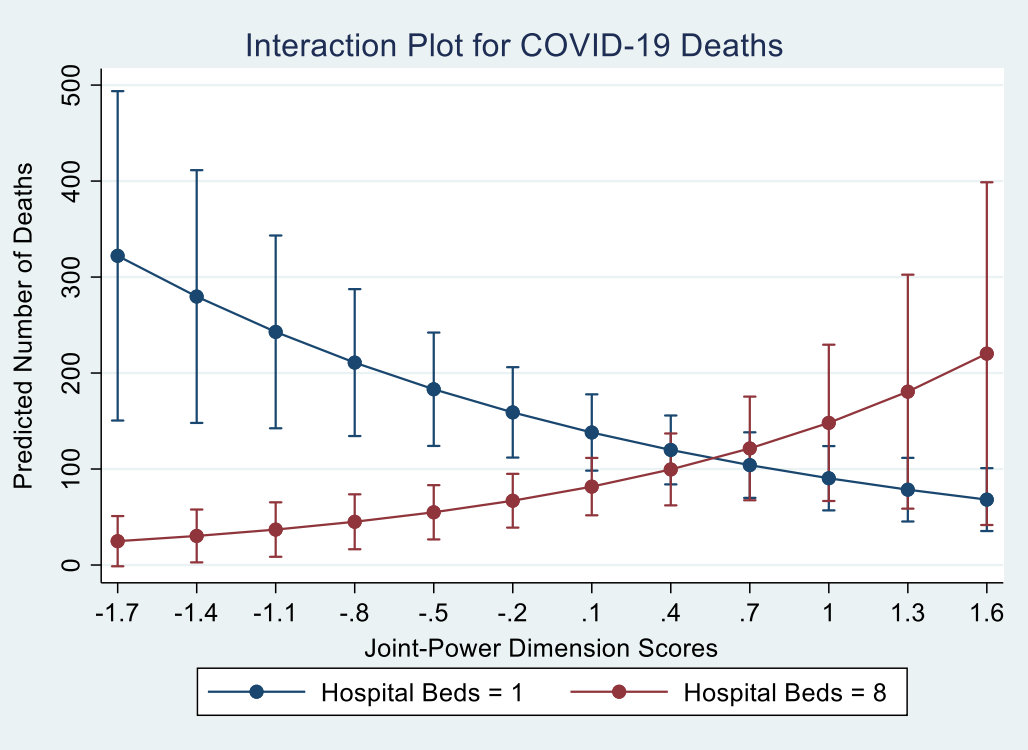


Table 4: Percentage Change in COVID-19 Deaths for Model 6

Predictor Variables	*β*	*z*	*P>z*	*%*
Joint-power	-0.6001	-3.378	**0.001**	**-45.1**
Federal-unitary	0.0659	0.667	0.505	6.8
Hospital beds	-0.1054	-2.148	**0.032**	**-10.0**
Joint-power x Hospital beds	0.1525	2.876	**0.004**	**16.5**
Stringency index	0.0121	1.762	**0.078**	**1.2**
Polarization	-0.4094	-5.053	**0.000**	**-33.6**
Cases	0.0000	2.692	**0.007**	**0.0**
Population	-0.1546	-2.264	**0.024**	**-14.3**
GDP per capita	0.0000	1.635	0.102	0.0
Median age	0.0303	2.127	**0.033**	**3.1**
2021	0.6907	2.918	**0.004**	**99.5**
2022	0.5800	1.732	**0.083**	**78.6**

While these numbers may uncover interesting patterns, what do they tell us about how countries *differ* from one another on these metrics? First, we can point to the United Kingdom (UK). The UK scores a -1.48 on the joint-power dimension—it is heavily majoritarian. It also has very few

hospital beds per one thousand people at 2.54. It is no surprise, then, that total death rate in March 2022 was 241.6478 per 100,000 people. Clearly, majoritarian systems with scarce hospital resources perform very poorly. In contrast, Germany scores .63 on the joint-power dimension (it is a consensus democracy) and has over eight hospital beds per one thousand people. Germany's total death rate in March 2022 was 152.0838—almost one hundred deaths lower. France, like the United Kingdom, is also highly majoritarian with a score of -.89 but invests a lot into hospital infrastructure and has 5.98 beds per one thousand people. However, France's death rate climbed to 210.4506 per 100,000 people. A final illustrative example is Denmark. Denmark is a consensus democracy (1.35 on joint-power dimension), but it also has a surprisingly low amount of hospital beds per one thousand people at 2.5. However, Denmark has handled the pandemic remarkably well. At its highest, Denmark's death rate was 96.07277 per 100,000 people. Despite the low hospital resources, Denmark's consensus institutions appear to influence their low death rates. These country examples further highlight the interaction between horizontal institutions and healthcare systems. Investment in healthcare systems may not be enough, as political institutions exert a significant effect. The federal-unitary dimension falls out of significance in this final model—which runs counter to earlier literature and case studies about the importance of federalism. When including both in the same model, horizontal institutions exert a much greater effect at reducing COVID-19 death rates. It is worth reiterating that even though some of the coefficients approach statistical non-significance, the outcome variable of interest are lives—any factors that decrease or increase death are substantively important.

In model 7, we test the relationship between healthcare system resources, consensus democracy, and polarization on the imposition of civil liberties. Table 5 presents these results on the next page. Unfortunately, the evidence appears inconsistent with our own initial expectations.

While the coefficient on the joint-power dimension variable is negative in the right hypothesized direction, it is not significant. There is insufficient evidence in our data to conclude a non-zero correlation between consensus democracy and the imposition of civil liberties restrictions. On the federal-unitary dimension, the results are significant in the opposite direction. Federal systems impose *more* civil liberties restrictions. Our initial expectation was that consensus democracies would be less willing to impose civil liberties restrictions on their populations because of the more deliberative nature of their political institutions—but that is not born out.

Table 5: OLS Regression of Consensus Democracy, Healthcare System Resources, and Polarization on the Restriction of Civil Liberties

	Model 7	
Deaths	0.020	(1.1406)
Cases	-0.000	(-1.6568)
Joint-power	-1.448	(-1.1619)
Federal-unitary	3.656***	(2.8306)
Hospital beds	-0.889	(-1.1602)
Polarization	-1.270	(-1.1217)
Population(log)	0.080	(0.1058)
GDP per capita	-0.000	(-1.6233)
Median age	0.363	(1.1076)
2021	1.316	(0.5487)
2022	-5.295	(-1.1985)
Constant	49.352***	(3.0883)
Observations	105	
R^2	0.3853	

Note: t statistics in parentheses and * $p < .1$, ** $p < .05$, *** $p < .01$

In a final step, we investigate whether our controls act like there are supposed to. Cases are highly significant and in the expected direction, but the magnitude is near 0. Across all the democracies in the data set, as cases per 100,000 people increases, so does the death rate. Surprisingly, population size has the reverse effect—increased population decreases COVID-19 deaths. However, GDP per capita has almost no effect on death rates (the coefficient is near 0) when including the other variables in the model—indicating that financial resources (at least in the affluent democracies in our study) are not significant in managing the COVID-19 crisis. Median age also acts as expected, as the median age increase, so too does the death rate, which is consistent with the medical literature on COVID-19 and at-risk groups (see Yanez et al. 2020). Our lone categorical variable, year, also highlights some interesting results because 2021 is highly significant in death rates—this may be because we have full, complete data for only 2021 in addition to that year being particularly devastating to countries even with rollouts of several vaccines.

Analysis and Discussion

Interestingly, hospital beds per one thousand people was not significant on its own. The other main independent variables (joint-power dimension scores, stringency index, and polarization) were all highly significant and exerted a big independent effect on COVID-19 deaths. When including all of them in the model with the interaction effect, all these variables (except the stringency index) significantly lower COVID-19 deaths.

For healthcare system resources, the hospital beds per one thousand people was not significant on its own in model two; however, it becomes highly significant when we include it in model 6 with the interaction term. The linchpin between consensus democracy and COVID-19 deaths are the hospital beds available to the public indicating investments in the health sector.

We do find evidence to support ***H1.*** Other potential variables matter more for controlling the spread—including the horizontal institutions of democracy.

Our analysis uncovers a more nuanced role for political institutions. Much of the early work on institutions and COVID-19 focused on federalism that described a potential negative relationship between federalism and COVID-19 deaths: States with federalized systems that include sub-national autonomous units are better able to handle the crisis and have lower death rates. However, when including the vertical institutions *along* with horizontal institutions in the same model, federalism does not matter much. In model 6, after accounting for the interaction effect between hospital beds and horizontal institutions, the vertical institutions play almost no substantive role. Thus, our evidence does not support ***H2***. The sheer magnitude of the effect in the full model indicates that horizonal political institutions play a critical role in combatting the virus. Institutions that allow for more diversity in policymaking across Lijphart's original components (e.g., multi-party coalition cabinets, even distribution of power between legislatures and head executives, high number of effective parliamentary parties, proportional representation electoral systems, and a corporatist interest group structure) are better equipped to handle the problems that come with a virus that ignores political and geographic borders. But the effect of institutions, as model 6 shows, is conditional on the level of healthcare system resources. In this case, we can interpret the results in Model 6 as the positive effect of consensus democracy (again, operationalized as *less* deaths per 100,000 people) is conditioned on levels of healthcare resources. When healthcare resources are low, majoritarian systems do worse. This conditional relationship suggests that a more consensus-based approach to democratic governance may be more effective at handling an all-encompassing health crisis. Our empirical results provide firm evidence in support of ***H3*** and ***H4.***

Polarization exhibited the greatest magnitude in most of our models. On its own in model 4, polarization is highly correlated with COVID-19 death rates. That is, a one unit change in polarization (towards *less* polarization based on the coding scheme) produces a -0.368 change in the log of expected counts of deaths. This increases to -0.342 and -0.409 in models five and six respectively. When citizens are highly polarized, society becomes segregated into antagonistic groups that refuse to work with each other, even during a global pandemic. However, in cooperative societies (i.e., those societies with low polarization) fare much better. Our evidence supports ***H5.***

The role of civil liberties restrictions seems opaque. In model 6, there is some partial evidence indicating a relationship between the imposition of civil liberties restrictions and COVID-19 deaths but in the *opposite direction*. That is, typical measures like mask mandates or travel restrictions *increase* deaths, which runs counter to our expectations and those born out by the vast research on non-pharmacological inventions in disease management. We find little support for ***H6.*** We also find little support for our hypothesis that more consensus-based democracies will impose less civil liberties restrictions. When political institutions are filled with a diversity of voices and multiple points of entry, adopting sweeping restrictions such as stringent stay-at-home orders or travel restrictions may be less likely because the effect of such policy instruments are speculative and unknown. Consensus democracies *should* be more deliberative and controlled in their approach to restrict the fundamental building blocks of democratic society. However, model 7 shows that consensus democracies do not implement fewer civil liberties restrictions. We thus find little to no support for ***H7.***

Conclusion

Are kinder, gentler democracies better at handling COVID-19? The answer to the question that began this paper is, like the virus, multifaceted. What we can say is that consensus democracy, healthcare system resources, polarization, and the restriction of civil liberties do matter in controlling the spread. However, the link between the characteristics of democracy and the package of policy instruments designed to combat the virus are less clear. In terms of raw death rates, more consensus-based democracies have less deaths, but consensus democracies *do not* implement fewer civil liberties restrictions—the primary non-pharmacological approach to combatting COVID-19.

Data limitations prevent us from gauging how vaccine development and deployment affect death rates. Vaccines were (and still are) highly effective in controlling the spread when various rollouts began in early-to-mid 2021. This seems like the primary culprit that could throw off some of our results. But a question remains about the relationship between consensus democracy and vaccine rollouts. Do kinder, gentler democracies deploy more vaccines more quickly?

Undoubtedly policymaking on COVID-19 includes some feedback effects that our models do not capture. When states decide to pursue civil liberties restrictions, for example, the results of increased/decreased deaths factor into future decision making about the continued use of such policies. Increases or decreases in the death rates affect the value-orientations of citizens that, because of the bottom-up approach to polarization, influences political decision-making a variety of areas. While we have no empirical evidence to support these claims, this causal pathway seems most likely in evaluating the impact of civil liberties restrictions (as a policy instrument) on COVID-19 outcomes.

Regardless, the research presented in this paper attempted to unpack the relationship between the often forgotten about horizontal dimension of democracy and its great importance in the formulation and implementation of public policy measures designed to combat COVID-19. While the exact linkages remain fuzzy, kinder, gentler democracies *seem* to better at controlling the virus in comparison to majoritarian systems. This suggests that under certain conditions, consensus-based institutional regimes are preferrable to majoritarian ones—a finding with significant implications for both political leaders and institutional designers. Investigating the exact nature of the linkage between civil liberties and broader democratic institutions is an area for future research—but our results here demonstrate that should an area is both normatively and substantively important.

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Appendix A

Test for Multicollinearity (Variance-Inflation Factors)
Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Deaths	2.49	1.58	0.4010	0.5990
Cases	2.04	1.43	0.4900	0.5100
Hospital beds	1.86	1.36	0.5389	0.4611
Stringency index	1.65	1.28	0.6063	0.3937
Population (log)	2.84	1.68	0.3524	0.6476
GDP per capita	3.21	1.79	0.3117	0.6883
Median age	7.72	2.78	0.1296	0.8704
Pop aged over 70	10.79	3.28	0.0927	0.9073
Life expectancy	7.69	2.77	0.1301	0.8699
HDI	8.30	2.88	0.1204	0.8796
Polarization	2.71	1.65	0.3687	0.6313
Fed-uni dim	2.04	1.43	0.4904	0.5096
Joint-power dim	1.55	1.24	0.6458	0.3542
Mean VIF	**4.22**			

Correlation Matrix

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Deaths (1)	1.000									
Cases (2)	0.536	1.000								
Joint-power dimension (3)	-0.074	0.196	1.000							
Federal-unitary dimension (4)	0.159	-0.026	-0.017	1.000						
Hospital beds (5)	0.018	0.052	0.040	0.279	1.000					
Stringency index (6)	0.050	-0.377	-0.233	0.334	-0.004	1.000				
Population (7)	0.173	-0.047	0.020	0.564	0.087	0.301	1.000			
GDP per capita (8)	0.039	0.241	0.403	0.051	0.233	-0.250	-0.080	1.000		
Median age (9)	0.156	0.141	0.284	0.098	0.564	-0.004	0.141	0.417	1.000	
Polarization (10)	-0.394	-0.034	0.252	-0.357	-0.100	-0.338	-0.589	0.258	-0.024	1.000

Appendix B

Table 1B: Effect of Political Institutions (Revised EPD), Civil Liberties Restrictions, and Healthcare System Resources on COVID-19 Death Rates.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Revised EPD	-0.177**				-0.087	-0.687***
	(0.071)				(0.074)	(0.190)
Hospital beds		-0.092			-0.103**	-0.104**
		(0.066)			(0.052)	(0.050)
Stringency index			0.017**		0.010	0.013*
			(0.008)		(0.007)	(0.007)
Polarization				-0.368***	-0.341***	-0.398***
				(0.082)	(0.084)	(0.082)
Federal dimension	0.106	0.209*	0.092	0.092	0.152	0.088
	(0.087)	(0.119)	(0.090)	(0.082)	(0.099)	(0.098)
Cases	0.000***	0.000**	0.000**	0.000*	0.000**	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population (log)	0.044	0.006	0.024	-0.113*	-0.141**	-0.175***
	(0.055)	(0.068)	(0.060)	(0.068)	(0.068)	(0.065)
GDP per capita	-0.000	-0.000	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Median age	0.025**	0.030**	0.006	0.016	0.030**	0.036***
	(0.013)	(0.014)	(0.016)	(0.013)	(0.015)	(0.013)
2021	0.562**	0.597**	0.561**	0.799***	0.685***	0.689***
	(0.265)	(0.281)	(0.281)	(0.241)	(0.251)	(0.233)
2022	0.186	0.257	0.433	0.669*	0.558	0.573*
	(0.408)	(0.454)	(0.448)	(0.361)	(0.356)	(0.326)
Revised EPD x Hospital beds						0.183***
						(0.060)
Constant	2.027*	2.840**	2.015*	4.645***	4.275***	4.447***
	(1.129)	(1.234)	(1.162)	(1.124)	(1.109)	(1.107)
lnalpha	-0.342**	-0.330**	-0.349***	-0.443***	-0.501***	-0.590***
	(0.147)	(0.138)	(0.134)	(0.150)	(0.151)	(0.148)
N	105	105	105	105	105	105
AIC	1164.239	1165.500	1163.248	1152.673	1152.238	1144.564
BIC	1190.779	1192.040	1189.788	1179.213	1186.740	1181.720
Pseudo-R^2	0.0355	0.0344	0.0363	0.0453	0.0507	0.0588

Note: * $p < .1$, ** $p < .05$, *** $p < .01$

Table 2B: Effect of Consensus Democracy (Revised EPD) and Healthcare System Resources on the Restriction of Civil Liberties

	Model 7	
Deaths	0.019	(1.1087)
Cases	-0.000	(-1.5729)
Revised EPD	-1.151	(-0.8727)
Federal-unitary	3.486**	(2.5961)
Hospital beds	-0.825	(-1.0791)
Polarization	-1.406	(-1.2642)
Population(log)	0.092	(0.1162)
GDP per capita	-0.000*	(-1.6880)
Median age	0.341	(1.0434)
2021	1.318	(0.5478)
2022	-5.318	(-1.1748)
Constant	50.034***	(3.0231)
Observations	105	
R^2	0.3821	

Note: t statistics in parentheses and* $p < .1$, ** $p < .05$, *** $p < .01$